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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

August 31, 2001

Ms. Magalie R. Salas
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Oral Ex Parte Presentation
CC Docket No. 94-102

Dear Ms. Salas:

On behalf of my client QUALCOMM Incorporated ("QUALCOMM"), this is to report that on August 30, 2001, I met with Peter Tenhula, Senior Legal Advisor to Chairman Powell to discuss matters related to the above-referenced proceeding.

I. Summary

During this meeting, I discussed two principal topics with Mr. Tenhula. First, I provided Mr. Tenhula with information about the substantial progress of QUALCOMM and its handset vendor partners in producing phones containing QUALCOMM chips and software incorporating QUALCOMM's gpsOne position location technology (wireless assisted GPS), which meets the Commission's accuracy rules and will be ready for deployment by the Commission's October 1, 2001 deadline. It is now clear that a number of wireless carriers, including Sprint PCS, Verizon Wireless, Alltel, Qwest, and Leap Wireless, will be deploying this highly accurate position location technology consistent with the Commission's rules as they provide both 2G and 3G services, and the subscribers of these carriers' services will enjoy a large measure of added safety and protection from highly accurate E911 service.

Second, we also discussed QUALCOMM's opposition to the waiver requests filed by AT&T Wireless and Cingular seeking permission for delayed deployment of technologies (E-OTD and, in the case of AT&T Wireless, MNLS) which do not now meet the Commission's accuracy rules, will not do in the near future if ever, and will not be ready for deployment by the October 1, 2001 deadline, and QUALCOMM's opposition to any blanket rollback of the October 1, 2001 deadline or blanket rollback or elimination of any of the other deadlines in the Commission's E911 rules (so-called "uniform relief"). I argued that a grant of the AT&T and

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Cingular waiver requests would allow AT&T and Cingular to avoid providing highly accurate enhanced 911 service with the levels of accuracy which the police and other public safety officers need to safeguard the public and which other compliant wireless technologies, produced both by QUALCOMM and its competitors, can deliver. I also argued that the Commission should also deny these requests because any other action would create two very different sets of accuracy rules for wireless carriers: CDMA carriers would still have to meet the existing accuracy rules, but GSM and TDMA carriers would be permitted to meet very relaxed standards which they selected for themselves through their waiver requests. To protect the public, the Commission should deny these waiver requests. Further, I argued that a blanket rollback of either the October 1st deadline or any of the other deadlines or the elimination of any such deadline would be unnecessary, unwarranted, would only encourage delay by carriers, and would not result in faster deployment of E911 service for the public.

I also stated to Mr. Tenhula that the AT&T and Cingular waiver requests should be denied because of the availability of reasonable compliant alternatives for AT&T and Cingular. I summarized the very successful results of the extensive testing of wireless assisted GPS technology in Europe over the GSM air interface and in Japan over the PDC air interface and the successful deployment of assisted GPS over the PDC air interface on DoCoMo's cellular system in Japan, which are set forth in materials attached to this letter which I provided to Mr. Tenhula. I explained that the PDC air interface is similar to TDMA (both operate with narrow channels), and thus there is no merit to the notion that AT&T cannot deploy assisted GPS over its TDMA system to achieve much greater accuracy than is possible via MNLS because of TDMA's narrow channels. I told Mr. Tenhula that higher bandwidth (channel size) has nothing to do with the accuracy of assisted GPS. Higher bandwidth can produce greater resolution, but not greater accuracy.

II. QUALCOMM's Substantial Progress in Producing Chipsets and Software to Enable Wireless Carriers to Deploy Wireless Assisted GPS to Meet the Commission's Accuracy Requirements and the Commission's Deadlines

To demonstrate that QUALCOMM and its handset vendor partners are on track in producing 2G wireless phones containing QUALCOMM's MSM3300 chipsets, the first chipset which allows handset manufacturers to make 2G wireless phones incorporating QUALCOMM's gpsOne position location technology (wireless assisted GPS) to meet the FCC's E9-1-1 mandate, I showed Mr. Tenhula an actual Denso 3300 Form Factor Appropriate ("FFA") wireless phone containing a MSM3300 chipset, and I provided Mr. Tenhula with the attached page showing the Denso 3300 phone and describing the worldwide deployments of gpsOne. I explained to Mr. Tenhula that these Denso phones, along with 2G wireless phones manufactured by other handset vendors, will be available to wireless operators by October 1, 2001, with additional models containing the MSM3300 available shortly thereafter.

As a further demonstration that QUALCOMM is on schedule in the production of chipsets incorporating QUALCOMM's gpsOne technology, I showed Mr. Tenhula a wireless device incorporating the MSM3300 which was deployed beginning in Japan in April 2001 by a private Japanese security company, SECOM, using KDDI's cellular network. I also gave him

the attached page on this first gpsOne commercial deployment, which has a picture of this device marketed by SECOM. I stated that this deployment has been very successful both commercially and in enhancing public safety, and the initial commercial results are more fully described in my ex parte letter dated April 25, 2001. I explained that since April 2001, through these devices, thousands of Japanese citizens and their families have enjoyed the added safety afforded by wireless assisted GPS at accuracy levels meeting or exceeding the Commission's accuracy rules for handset solutions.

In addition, I discussed with Mr. Tenhula QUALCOMM's current progress in producing chipsets containing both QUALCOMM's gpsOne position location technology and QUALCOMM's 3G cdma2000 1x technology. I provided him with a copy of the attached press release, dated April 16, 2001, in which QUALCOMM announced that it had begun shipping samples of its MSM5100 chipset, which includes both QUALCOMM's gpsOne technology to meet the FCC's E911 mandate and QUALCOMM's 3G cdma2000 1x technology, which supports data rates of up to 307 kbps to enable the provision of 3G services.

I explained that based upon QUALCOMM's current schedule in the production and shipment of MSM5100 chipsets and QUALCOMM's understanding of the current progress of handset manufacturers, QUALCOMM anticipates that there should be 5100-powered handsets, with both E911 and 3G 1x capabilities, commercially available before the end of 2001. Thus, without any additional spectrum, wireless carriers who have opted to deploy cdma2000 1x and gpsOne will be able to deliver both 3G high speed data services and the added protection afforded by enhanced 911 service consistent with the Commission's accuracy rules beginning in late 2001.

I told Mr. Tenhula that QUALCOMM has been sensitive to the needs of wireless carriers, particularly the smaller carriers, for technical assistance in deploying gpsOne. In their filings with the Commission, numerous carriers stated that they were interested in a "turnkey" solution for E911 service. I stated that, as set forth in the attached August 6, 2001 press release, SnapTrack, a wholly-owned subsidiary of QUALCOMM, has entered into an agreement with TechnoCom Corporation ("TechnoCom"), the premier wireless location system deployment and integration firm in the country, which establishes TechnoCom as the preferred field-test, engineering, and integration contractor for carriers and OEMs for the implementation of gpsOne-based wireless location systems in the United States. TechnoCom will guide carriers through their gpsOne deployment and provide ongoing service assurance to maximize the performance of their gpsOne systems in a cost-effective manner.

In sum, I stated that QUALCOMM has followed through on its commitment to giving wireless carriers the tools they need to provide E911 service with the mandated accuracy levels to protect the public and to enable the carriers to meet the deadlines in the Commission's rules. I gave Mr. Tenhula the attached page which shows that the wireless assisted GPS technology has been tested worldwide on the AMPS, CDMA, GSM, and PDC (similar to TDMA) air interfaces and has exceeded the Commission's accuracy rules in all of these tests.

III. The Commission Should Deny the Requests of AT&T and Cingular for Waivers of the Rules to Deploy Technologies Which Do Not Meet the Commission's Accuracy Rules and Will Not Give the Public the Protection from Enhanced 911 Service Guaranteed By the Commission's Rules

I told Mr. Tenhula that the Commission should deny the AT&T and Cingular waiver requests because there are reasonable alternatives to a grant of a waiver to AT&T and Cingular, and the technology for which they seek a waiver to deploy over an extended timetable falls far short of the accuracy rules and is not likely in the near future, if ever, to become compliant.

A. There Are Reasonable Alternatives to a Waiver of the Accuracy Rules for AT&T and Cingular

In addition to the information set forth in QUALCOMM's filings of September 29, 2000 and September 1, 2000 as to a number of reasonable alternatives to the grant of a waiver to GSM carriers to implement E-OTD, I provided Mr. Tenhula with additional information in the documents attached to this letter showing that there are reasonable alternatives to grant of a waiver to Cingular or AT&T to deploy E-OTD over GSM systems and to AT&T to deploy MNLS over TDMA systems.

First, with regard to GSM systems, I gave Mr. Tenhula an overview of the extensive testing in Europe which proves that assisted GPS works on GSM systems to produce accuracy which exceeds the FCC's requirements for handset solutions. I provided Mr. Tenhula with a copy of the attached press release dated November 28, 2000 announcing the completion of an extensive set of independently audited tests by the Snap Track GSM Test Group of wireless assisted GPS over GSM systems in Europe. This testing was conducted over GSM systems in Paris, Bonn, London, Utrecht, and other European locations, included testing of cross-border roaming, and achieved accuracies which exceeded the FCC's accuracy requirements. Infrastructure providers CMG Telecommunications, Nortel Networks, and Siemens Information and Communications Networks also participated in these tests. These tests proved that wireless assisted GPS technology is technically feasible for AT&T, Cingular, and other GSM carriers. I also gave Mr. Tenhula a copy of the attached presentation entitled "Non-CDMA Trials Prove WAG Around the World," which contains additional information about the extensive testing on European GSM systems and elsewhere and the very favorable results. I told Mr. Tenhula that if these carriers pursued this technology with handset vendors, there was no reason why it could not be deployed commercially.

I also told Mr. Tenhula about the attached press release dated August 7, 2001 announcing that CellPoint and SiRF had formed a strategic partnership to integrate wireless assisted GPS technology with network technology for GSM carriers in the United States, and I provided him with a copy of the press release.

Second, with regard to TDMA, I explained to Mr. Tenhula that assisted GPS had been tested and deployed over DoCoMo's cellular system which uses the PDC air interface, an air interface which is similar to TDMA and which, like TDMA, has narrow channels. I stated that

the test results showed that the test results, which are summarized in the attached slide entitled "Audited SnapTrack Japan Field Testing", showed that assisted GPS over DoCoMo system produced accuracy which exceeds the FCC's requirements for handset solutions. I also explained that assisted GPS had been deployed by DoCoMo over its PDC cellular network and marketed as a service known as DoCoNavi using PDAs made by Denso (the Naviewn). I also said that NEC Corporation and Snap Track had developed a chipset incorporating wireless assisted GPS for wireless phones using the PDC air interface, and I gave Mr. Tenhula a copy of a press release dated January 31, 2001 (attached hereto) which confirms this.

Based upon all of this information, I reiterated QUALCOMM's position that AT&T and Cingular have not met, and cannot meet, their burden of showing the absence of reasonable alternatives to the grant of their waiver requests, and as a result, the Commission should deny the waiver requests.

B. E-OTD and MNLS Technology Does Not Meet the FCC's Accuracy Rules, Will Not Meet Those Rules in the Near Future If Ever, and Is Not Reliable

I told Mr. Tenhula that E-OTD and MNLS are not reliable location technologies, and the Commission should not grant a waiver of the accuracy rules to permit AT&T and Cingular to deploy these deficient technologies. In this regard, I gave Mr. Tenhula a copy of my August 13, 2001 ex parte letter, a copy of which is attached, which I said provides detailed information about the serious flaws in these technologies. I also told him that US Wireless, which had been a major proponent of MNLS, had filed for bankruptcy.

I provided Mr. Tenhula with a copy of each of the documents attached hereto.

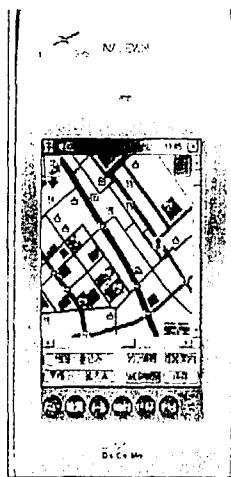
Sincerely yours,



Dean R. Brenner
Attorney for QUALCOMM Incorporated

cc: Peter Tenhula, Esq.

gpsOne and SnapTrack Worldwide Deployment



- Over 30 carriers on three continents have trialed SnapTrack/gpsOne technology in the past 3 years on all major air interfaces
- January 2000 deployment of SnapTrack-enhanced Naviewn in Japan by NTT DoCoMo
- 2001 gpsOne MSM-3300-based deployment in Japan by SECOM on the KDDI network
- 2H2001 deployment of SnapTrack-enhanced 2-way pagers (ReFLEX) in North America via Locate Networks/Glenayre and partners
- 2H2001 gpsOne and MSM-3300 deployment in US by major US CDMA carriers (Sprint PCS, etc.)
- Over 20 CDMA handset manufacturers developing gpsOne-enabled handsets for both Asian and US markets
- Solutions for multiple air interfaces available beginning 2002

May 2001

QUALCOMM

First gpsOne Commercial Product

SECOM.

ポケットの中に、セコム。

「あの子、どこ行っちゃったのかしら」「おばあちゃん、遅い遅いわね...」「あれ?駐車場のクルマがない...」 あってはならぬ

い、万が一の事態に備えること。そんなセキュリティの概念を、今、セコムはさらに進化させます。受信性能を格段に向上させた最先端のGPS技術と、携帯電話ネットワークを活用する測位システムを融合。24時間365日、小型専用端末を所持した利用者または車両の位置情報をかつぎ、高精度で提供するだけでなく、要請に応じ全国約900カ所の緊急発進基地から、セコムが誇る緊急対応員が出勤します。セコムが誇る緊急対応員が出勤します。クルマ、バイク用で900円からと、低価格を実現。それは、あなたの大切なひとを、クルマを、バイクを見守る、携帯するセキュリティ。セコムから、「位置情報提供・急行サービス」誕生。詳しくは、フリーダイヤルまたはホームページで。

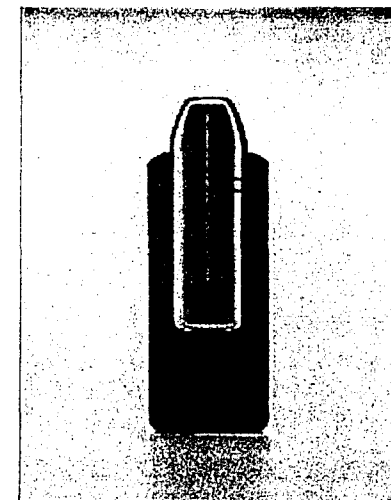
さがす、みつかる、かけつける。

ココセコム

4月1日(日) 全国一斉サービス開始。 0120-855756 www.855756.com

SECOM. We are SECOM.

- SECOM/Hitachi security device on a KDDI CDMA commercial network in Japan
- First deployed April 1, 2001
- Monthly fee: \$5/month, including 2 locate fixes
- Applications in Japan include monitoring location of automobiles, motorcycles, children, seniors



**DENSO
3300**



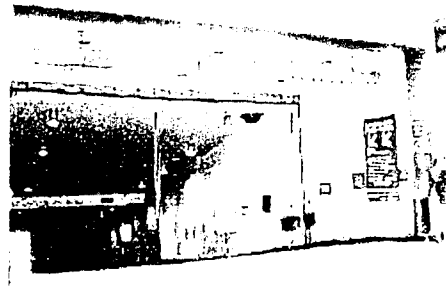
First Position Location-Enabled Phone

- **Wireless Assisted GPS**
- **Location service support**
- **Customized services**
- **MIDI-compatible downloadable ringers**
- **Enhanced voice services**
- **Web browser**

Wireless Assisted GPS Proven Worldwide on Major Air Interfaces: AMPS, CDMA or GSM



Denver, CO (analog/CDMA)
outdoor, open: $1-\Sigma = 4$ m



San Francisco, CA (analog/GSM/CDMA)
inside urban parking garage: $1-\Sigma = 45$ m



Tampa, FL (CDMA)
1st story, 2-story house: $1-\Sigma = 20$



Tokyo, Japan (PHS/PDC)
dense urban: $1-\Sigma = 18$ m



Madrid, Spain (GSM)
dense urban: $1-\Sigma = 37$ m



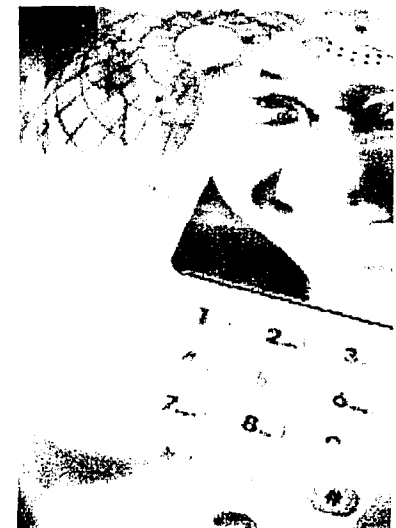
Washington, D.C. (analog)
urban alley: $1-\Sigma = 50$ m

*Sample data from specific field tests, may not be representative of all conditions

Providing Safety and Privacy

- **gpsOne is a handset-based technology; all satellite and pilot measurements are taken at the handset**
- **Position location can be turned off at the handset**
 - “Opt-in” approach: settings preset to off
 - Four possible settings:
 - Off except for E-911 calls
 - Off for network (external) initiated requests
 - Off for handset initiated requests
 - On
- **Location generated only when specifically requested or authorized by a subscriber – consistent with Location On Demand™ feature**
 - Prevents unauthorized location of wireless consumers
- **gpsOne is the only technology that satisfies both privacy and safety concerns**

* E911 Capability is always on





Non-CDMA Trials Prove WAG Around the World

Publicly Disclosed Trials

- United States
 - San Francisco (U.S. Marines Urban Warrior Exercise): GSM
 - Washington, D.C. : Analog
 - Denver: Analog/CDMA end-to-end E9-1-1 trial*
 - San Francisco Bay Area: Analog
 - Charlotte, NC: GSM
- Japan
 - Kyoto (Manufacturer): PHS
 - Tokyo (NTT DoCoMo): PDC
- Europe
 - France, Britain, Germany, BenNeLux: (France Telecom and members of the GSM Test Group): GSM
 - Spain (Telefonica Moviles and members of the GSM Test Group): GSM
 - Italy (Carrier): GSM
 - Finland (Manufacturer): GSM

* With Denver and Adams County PSAPs, SignalSoft, SCC, U.S. WEST Wireless



Audited SnapTrack Japan Field Testing



Each location is an independent fix from a cold start

<u>Location</u>	<u>1-sigma (68.3%)</u>	<u>Yield</u>
Outdoor, Kawasaki	4 meters	100%
Indoor, Kawasaki	12 m	100%
Outside, Shinbashi	12 m	100%
Inside Coffee Shop, Shinbashi	20 m	100%
Alley, Ginza	18 m	100%
I-Land Street, Shinjuku	44 m	100%

*Testing designed and audited by NTT DoCoMo on
PDC network



SnapTrack GSM Test Group

- SnapTrack GSM Test Group
 - Publicly disclosed members include Vodafone AirTouch Communications PLC (UK and US), BellSouth Mobility DCS (US), BT Cellnet (UK), Esat Digifone (Ireland), France Telecom (France), Omnitel Pronto Italia (Italy), Powertel (US), T-Mobil (Germany), Telecel (Portugal) and Telefonica (Spain), and applications developer SignalSoft (UK and US). Motorola provided prototype handsets. Infrastructure providers CMG Telecommunications (Holland), Nortel Networks (France) and Siemens Information and Communication Networks (Germany) also participated in the trials.
- First phase completed 10/99
 - First publicly announced end-to-end location application trials conducted in Madrid Spain on Telefonica Moviles network
- Second phase completed 10/00
 - Pan-European roaming trials hosted by France Telecom



A QUALCOMM Company

GSM Roaming Trials With European Carriers



(Trials Host)



Sweden



Telefónica Servicios Móviles



Sample Trial Locations



Trial results

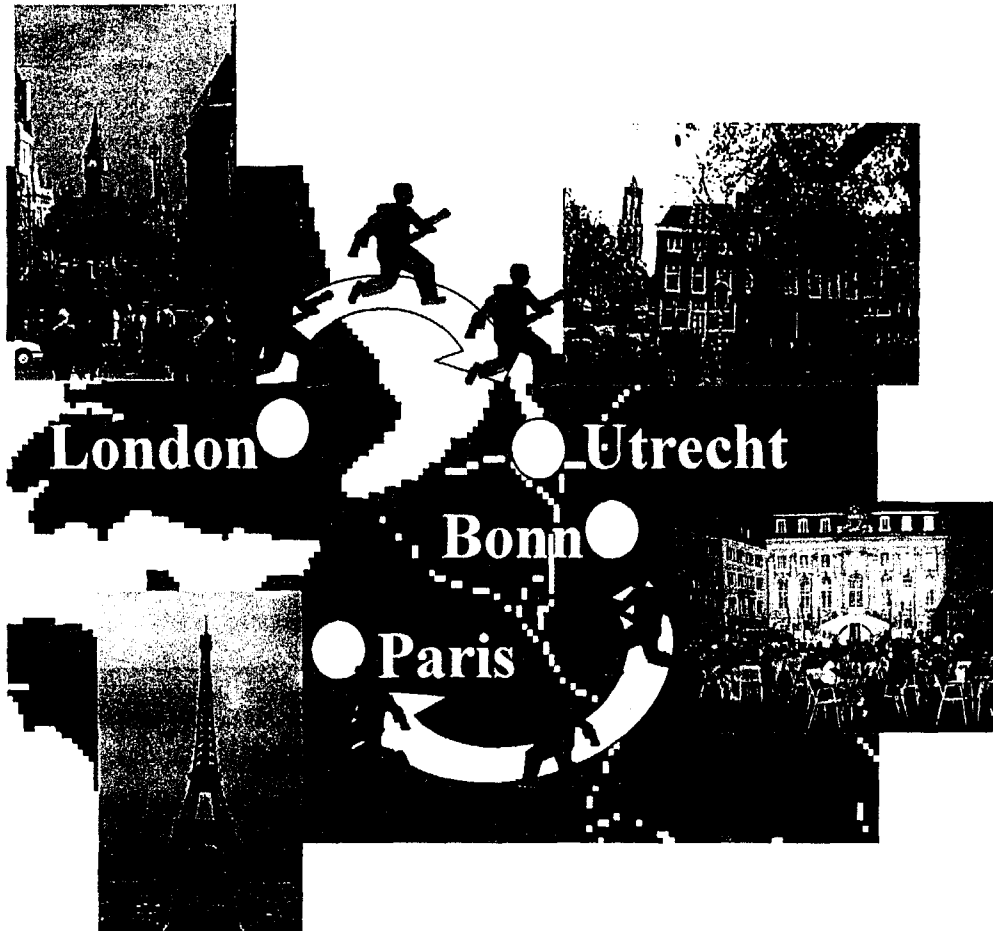
Suburban/Rural: 5m to 10m

Urban/Dense Urban: 10m to 50m

Indoor (apartment, office, home, shops): 20m to 45m

Pan-European Trials

Show Wide Area Deployment



- Wide area deployment
 - Single location server provided location calculations for wide area
 - No LMUs or extensive infrastructure modifications for deployment
- Wide range of environments
 - Indoor and outdoor
 - Urban and rural
- Use of SMS for data transport
- Prototype terminals from Motorola

Field Test Results



Hyde Park of London, UK
Outdoor: 8.89m accuracy
Yield: 100%



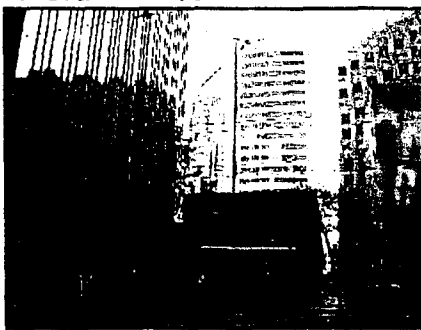
Shaftsbury Hotel, London, UK
Urban Outdoor: 29.76m
accuracy
Yield: 100%



San Isidro Church, Madrid, Spain
Dense Urban: 37.6m accuracy
Yield: 99.5%



Place de Pantheon, Paris, France
Urban Outdoor: 37.84m accuracy
Yield: 100%



Downtown San Francisco, Indoor
1st floor of skyscraper, Briazz Deli
Inside, Deep Urban Canyon:
108m accuracy
Yield: 97%



Restaurant Les Chevaux de
Marly, Paris, France
Indoor: 31.52m accuracy
Yield: 98.1%

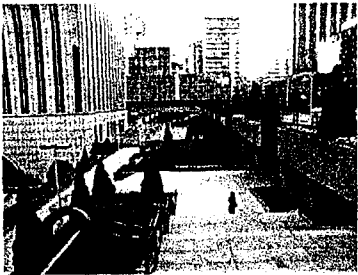
GSM End-to-End Applications Field Trials

Madrid Test Objectives

- Validate performance of SnapTrack's wireless-assisted GPS technology when integrated into a GSM network
- Demonstrate representative commercial applications which take advantage of highly accurate location
 - Support Carrier's business modeling & service planning
 - Concierge Services
 - Personnel / Vehicle Tracking
- Characterize performance of SnapTrack's wireless-assisted GPS technology in representative European environments
 - Use of carrier signal for stability
 - Use of cell site for approximate location
 - Demonstration of time determination using pattern matching approach
 - Performance in the presence of handset transmission noise

Application Trials Conducted in Typical Call Environments

Interior, 20th floor
Torre Picasso



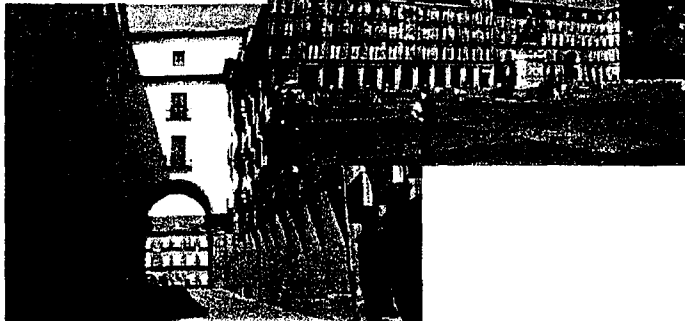
Preciados



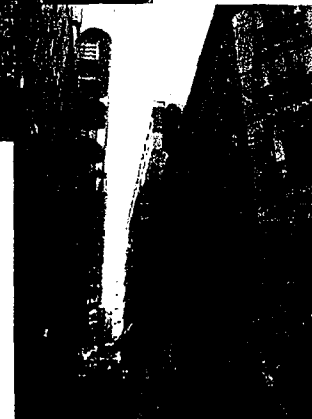
Plaza Mayor



Toledo



Carmen



Cordon



San Isidro

Accurate breadcrumb and on-demand location trials were conducted with no drops in all of the above environments



Performance Summary

- High Availability
 - Determines location inside most buildings, urban areas with severe multipath, and rural areas even with single base station coverage
 - Allows user roaming services
- High Performance
 - 5-50 meter precision in most environments
 - Less than 6 seconds to first fix (from cold start), update fixes in 1-2 seconds
- Low Cost
 - Less expensive than network-based solutions, which require hardware and software at many base stations
 - Easier to upgrade and maintain than network-based systems
- Integration
 - Architecture simplifies integration into wireless network
 - Functions on any air interface: telephony, paging, satellite
 - May be integrated into nearly any wireless device, including mobiles, PDAs, and pagers
 - Able to interface with any mapping system

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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY**

August 13, 2001

Ms. Magalie R. Salas
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

**Re: Oral Ex Parte Presentation
CC Docket No. 94-102**

Dear Ms. Salas:

On behalf of my client QUALCOMM Incorporated ("QUALCOMM"), this is to report that on August 10, 2001, Jonas Neihardt, Vice President, Federal Affairs of QUALCOMM, and I met with Kris Monteith, Tom Navin, Patrick Forster, and Marty Liebman of the Wireless Telecommunications Bureau (collectively referred to as the "WTB Staff") to discuss matters related to the above-referenced proceeding.

I. Summary

At the meeting, we discussed two principal topics. First, we provided the WTB Staff with information about the substantial progress of QUALCOMM and its handset vendor partners in producing phones containing QUALCOMM chips and software incorporating QUALCOMM's gpsOne position location technology (wireless assisted GPS), which meets the Commission's accuracy rules and will be ready for deployment by the Commission's October 1, 2001 deadline. It is now clear that a number of wireless carriers, including Sprint PCS, Verizon Wireless, Alltel, Qwest, and Leap Wireless, will be deploying the highly accurate gpsOne position location technology consistent with the Commission's rules as they provide both 2G and 3G services, and the subscribers of these carriers' services will enjoy a large measure of added safety and protection from highly accurate E911 service.

Second, we also discussed QUALCOMM's opposition to the waiver requests filed by AT&T Wireless and Cingular seeking permission for delayed deployment of technologies (E-OTD and, in the case of AT&T Wireless, MNLS) which do not now meet the Commission's accuracy rules, will not do in the near future if ever, and will not be ready for deployment by the October 1, 2001 deadline. We argued that a grant of these waiver requests would allow AT&T

Wireless and Cingular to avoid providing highly accurate enhanced 911 service with the levels of accuracy which the police and other public safety officers need to safeguard the public and which other compliant wireless technologies, produced both by QUALCOMM and its competitors, can deliver. To protect the public, the Commission should deny these waiver requests.

We also said that the Commission should also deny these requests because any other action would create two very different sets of accuracy rules for wireless carriers: CDMA carriers would still have to meet the existing accuracy rules, but GSM and TDMA carriers would be permitted to meet very relaxed standards which they selected for themselves through their waiver requests. We told the WTB Staff that such a result would be fundamentally unfair and would distort the competitive marketplace for wireless services. To protect the public and to ensure a level playing field in the wireless marketplace, we stated that the Commission should insist that all carriers adhere to the same set of accuracy rules, the rules which are supposed to give the nation's public safety community the highly accurate enhanced 911 service they need to protect the public's safety.

Major nationwide wireless carriers such as AT&T and Cingular are certainly not at any disadvantage in deploying compliant E911 technology just because they use the TDMA and GSM air interfaces. In the meeting with the WTB Staff, we reminded them that, as QUALCOMM has noted in prior filings in the E911 proceeding, QUALCOMM has licensed its technology to Texas Instruments and Motorola, companies which produce chips for GSM and TDMA phones. We also provided the WTB Staff with information in the attached documents showing that QUALCOMM's Snap Track subsidiary has successfully demonstrated in Europe that its wireless assisted GPS technology works well for GSM carriers and that NEC is in the process of producing chipsets for the PDC air interface, an interface used by Japanese carriers which is similar to TDMA. We explained that QUALCOMM's wireless assisted GPS technology is not dependent on a particular air interface or type of wireless network. Moreover, we provided the WTB Staff with a copy of a recent announcement by Cellpoint and SiRF announcing a partnership to deliver a platform of GSM phones with assisted GPS technology for U.S. wireless operators with GSM systems.

The only fair conclusion from this base of information is that if either AT&T or Cingular had asked handset vendors to deliver wireless phones with compliant assisted GPS technology, they could do so, but for their own reasons, AT&T and Cingular have decided not to do so. As a result, during the meeting, we urged the Commission to conclude that there are reasonable alternatives to a waiver, and on this basis as well, the Commission should deny waivers to AT&T and Cingular.

In addition, we pointed out to the WTB Staff the substantial deficiencies in both the E-OTD and MNLS technologies. The AT&T and Cingular waiver requests do not represent "paths to compliance" because there has been no proof that these technologies can ever meet the Commission's accuracy rules.

QUALCOMM has previously described the inadequacies of E-OTD in its prior filings to which we referred in the meeting, including its September 29, 2000 filing which attached a Technical Report of Omnipoint Technologies finding that E-OTD is not robust, will not produce the level of accuracy promised by its proponents, and is inferior to uplink TOA, a location technology offered by a variety of vendors. We also referred to a letter dated September 1, 2000 summarizing QUALCOMM's ex parte presentations on August 31, 2000 concerning the availability of compliant alternatives for GSM carriers and the lack of sufficient testing of E-OTD.

With regard to MNLS, we pointed out that recent filings by TruePosition and SigmaOne Communications dated July 23 and 24, 2001 have established that the MNLS technology will not work to produce the necessary levels of accuracy and has not been sufficiently tested. AT&T appears to acknowledge the insufficiency of the testing of MNLS in its letter of August 6, 2001 to the Chief of the Wireless Telecommunications Bureau, in which AT&T announces that in early September, less than one month before the deadline for the deployment of E911 service, AT&T "hopes" to begin drive testing of MNLS in Orlando, Florida.

Moreover, we noted that on August 8, 2001, US Wireless filed a Technical Report with the results of testing of MNLS in two highly limited and selected geographic areas comprising a total of 22.5 square miles, testing which was conducted after two models were developed using data from these small regions. One of the two models was a sophisticated CRC model developed for the specific regions tested, and it was this model which US Wireless used to validate the test results to support the claim that the technology could be used in the balance of AT&T's network. In our meeting with the WTB Staff, we pointed out that even under these cherry picked, ideal conditions (areas which have an unduly large number of cell sites), this testing actually provides no support for any claim that MNLS is a reliable location method or that it will ever come close to the Commission's accuracy rules. US Wireless picked two well surveyed, confined, and small areas, built models and algorithms for those areas, and then conducted tests in the same areas; and, to get test results close to the woefully inadequate levels of accuracy promised by AT&T, they had to take repeated measurements (3 to 6 times) at each location. In fact, all test data and calibration data were taken from the dashboard of a van traveling down streets and highways; the test provides no insight about how MNLS would perform for users on a sidewalk, in a shop, or anywhere other than in a van in the middle of the road. We told the WTB Staff that this testing says nothing about whether the models or the MNLS technology would work in any other area, much less any area where repeated calibration measurements have not been taken to build a database, where the cell sites are more typically spaced, or where signal strength is not predictable for a host of reasons.

Indeed, we noted that the US Wireless testing purposely excluded rural areas or indoor settings, where it is apparent that MNLS will not work to any reliable or substantial extent. US Wireless does not even attempt to explain the level of accuracy by which MNLS will yield positioning indoors, where the required signal strength may not be achieved. Likewise, even in AT&T's Orlando testing, they apparently will not try to test MNLS in a rural area. Residents of

rural areas especially need E911 service because they tend to live greater distances from hospitals and emergency facilities, and the use of MNLS will not enable AT&T to provide accurate E911 service in such areas. We stated that MNLS technology will not work satisfactorily in rural areas, indoors, or in any other area in which AT&T has not performed extensive calibration measurements repeatedly and within a recent time frame from the date of any particular 911 call since US Wireless itself has written that, in its experience, drive testing is required approximately twice per year in the affected regions to maintain performance levels. In short, MNLS technology will not provide reliable or accurate E911 service throughout the country.

For all of these reasons, in our meeting with the WTB Staff, we urged the Commission to deny the AT&T and Cingular waiver requests. We explained that previously, Snap Track and other companies asked the Commission for more time to deliver a solution with substantially greater accuracy. By contrast, now, AT&T and Cingular are now each asking for more time to deploy technologies with substantially worse accuracy. AT&T and Cingular's requests are not in the public interest and should therefore be denied.

II. QUALCOMM's Substantial Progress in Producing Chipsets and Software to Enable Wireless Carriers to Deploy Wireless Assisted GPS to Meet the Commission's Accuracy Requirements and the Commission's Deadlines

To demonstrate that QUALCOMM and its handset vendor partners are on track in producing 2G wireless phones containing QUALCOMM's MSM3300 chipsets, the first chipset which allows handset manufacturers to make 2G wireless phones incorporating QUALCOMM's gpsOne position location technology (wireless assisted GPS) to meet the FCC's E9-1-1 mandate, we showed the WTB Staff an actual Denso 3300 Form Factor Appropriate ("FFA") wireless phone containing a MSM3300 chipset, and we provided the WTB Staff with the attached page showing the Denso 3300 phone and describing the worldwide deployments of gpsOne. We explained to the WTB Staff that these Denso phones, along with 2G wireless phones manufactured by other handset vendors, will be available to wireless operators by October 1, 2001, with additional models containing the MSM3300 available shortly thereafter.

As a further demonstration that QUALCOMM is on schedule in the production of chipsets incorporating QUALCOMM's gpsOne technology, we showed the WTB Staff a wireless device incorporating the MSM3300 which was deployed beginning in Japan in April 2001 by a private Japanese security company, SECOM, using KDDI's cellular network. We gave the WTB Staff the attached page on this first gpsOne commercial deployment, which has a picture of this device marketed by SECOM. We stated that this deployment has been very successful both commercially and in enhancing public safety, and the initial commercial results are more fully described in my ex parte letter dated April 25, 2001. Since April 2001, through these devices, thousands of Japanese citizens and their families have enjoyed the added safety afforded by wireless assisted GPS at accuracy levels meeting or exceeding the Commission's accuracy rules for handset solutions.

In addition, we discussed with the WTB Staff QUALCOMM's current progress in producing chipsets containing both QUALCOMM's gpsOne position location technology and QUALCOMM's 3G cdma2000 1x technology. We provided the WTB Staff with a copy of the attached press release, dated April 16, 2001, in which QUALCOMM announced that it had begun shipping samples of its MSM5100 chipset, which includes both QUALCOMM's gpsOne technology to meet the FCC's E911 mandate and QUALCOMM's 3G cdma2000 1x technology, which supports data rates of up to 307 kbps to enable the provision of 3G services.

Based upon QUALCOMM's current schedule in the production and shipment of MSM5100 chipsets and QUALCOMM's understanding of the current progress of handset manufacturers, we stated that QUALCOMM anticipates that there should be 5100-powered handsets, with both E911 and 3G 1x capabilities, commercially available before the end of 2001. Thus, without any additional spectrum, wireless carriers who have opted to deploy cdma2000 1x and gpsOne will be able to deliver both 3G high speed data services and the added protection afforded by enhanced 911 service consistent with the Commission's accuracy rules beginning in late 2001.

QUALCOMM has been sensitive to the needs of wireless carriers, particularly the smaller carriers, for technical assistance in deploying gpsOne. In their filings with the Commission, numerous carriers stated that they were interested in a "turnkey" solution for E911 service. To this end, we provided the WTB Staff with the attached press released dated August 6, 2001 in which Snap Track, a wholly-owned subsidiary of QUALCOMM, announced an agreement with TechnoCom Corporation ("TechnoCom"), the premier wireless location system deployment and integration experts in the country, which establishes TechnoCom as the preferred field-test, engineering, and integration contractor for carriers and OEMs for the implementation of gpsOne-based wireless location systems in the United States. TechnoCom will guide carriers through their gpsOne deployment and provide ongoing service assurance to maximize the performance of their gpsOne systems in a cost-effective manner. Thus, we explained that QUALCOMM was responding to the needs of wireless carriers as they seek to initiate Phase II service.

In sum, we stated that QUALCOMM has followed through on its commitment to giving wireless carriers the tools they need to provide E911 service with the mandated accuracy levels to protect the public and to enable the carriers to meet the deadlines in the Commission's rules. We gave the WTB Staff the attached page which shows that the wireless assisted GPS technology has been tested worldwide on the AMPS, CDMA, GSM, and PDC (similar to TDMA) air interfaces and has exceeded the Commission's accuracy rules in all of these tests.

III. The Commission Should Deny the Requests of AT&T and Cingular for Waivers of the Rules to Deploy Technologies Which Do Not Meet the Commission's Accuracy Rules and Will Not Give the Public the Protection from Enhanced 911 Service Guaranteed By the Commission's Rules

We explained in our meeting that there are reasonable alternatives to a grant of a waiver to AT&T and Cingular, and that the technology for which they seek a waiver to deploy over an extended timetable falls far short of the accuracy rules and is not likely in the near future if ever to become compliant.

A. There Are Reasonable Alternatives to a Waiver

We told the WTB Staff that QUALCOMM's filings of September 29, 2000 and September 1, 2000 set forth a number of reasonable alternatives to grant of a waiver to GSM carriers to implement E-OTD, and these same alternatives precluded grant of a waiver to either Cingular or AT&T to implement E-OTD. We updated our prior filings with the following information which shows that there are reasonable alternatives to grant of a waiver to Cingular or AT&T to deploy E-OTD over GSM systems and to AT&T to deploy MNLS over TDMA systems.

First, with regard to GSM systems, we provided a copy of the attached press release dated November 28, 2000 announcing the completion of an extensive set of independently audited tests by the Snap Track GSM Test Group of wireless assisted GPS over GSM systems in Europe. This testing was conducted over GSM systems in Paris, Bonn, London, Utrecht, and other European locations, included testing of cross-border roaming, and achieved accuracies which exceeded the FCC's accuracy requirements. Infrastructure providers CMG Telecommunications, Nortel Networks, and Siemens Information and Communications Networks also participated in these tests. These tests proved that wireless assisted GPS technology is technically feasible for AT&T, Cingular, and other GSM carriers. We told the WTB Staff that if these carriers pursued this technology with handset vendors, there was no reason why it could not be deployed commercially.

Second, we provided the WTB Staff with the attached press release dated August 7, 2001 announcing that CellPoint and SiRF had formed a strategic partnership to integrate wireless assisted GPS technology with network technology for GSM carriers in the United States.

Third, with regard to TDMA, we gave the WTB Staff a copy of a press release dated January 31, 2001 announcing that NEC Corporation and Snap Track had developed a chipset incorporating wireless assisted GPS for wireless phones using the PDC air interface. Wireless phones containing these chipsets will be deployed in Japan. We explained to the WTB Staff that the PDC air interface is similar to TDMA.

Based upon all of this information, we reiterated QUALCOMM's position that AT&T

and Cingular have not met, and cannot meet, their burden of showing the absence of reasonable alternatives to the grant of their waiver requests, and as a result, the Commission should deny the waiver requests.

B. E-OTD and MNLS Technology Does Not Meet the FCC's Accuracy Rules, Will Not Meet Those Rules in the Near Future If Ever, and Is Not Reliable

We told the WTB Staff that QUALCOMM's filings of September 29, 2000 and September 1, 2000 already established that E-OTD was not compliant, was not likely to become compliant because of its inherent flaws, and is not a reliable location technology. In this regard, we referred the WTB Staff to the July 2, 1999 Technical Report of Omnipoint Technologies, Inc., which is attached to QUALCOMM's September 29, 2000 filing. The Report, which was prepared to compare location technologies under consideration by the GSM community, found that E-OTD technology is not robust, has extensive problems which will be difficult to solve, will not produce the accuracy promised by its proponents, and is inferior to uplink TOA, a technology which was the first location solution standardized for GSM carriers. Uplink TOA is a network technology which, in contrast to E-OTD, does not require any changes to handsets. We reiterated that the Commission should not grant a waiver to Cingular, AT&T, or any other carrier to deploy E-OTD in light of its deficiencies.

We also discussed with the WTB Staff the inherent deficiencies in the MNLS technology for which AT&T seeks a waiver to deploy over its TDMA network. We asked the WTB Staff to consider the real world impact of granting a waiver for this technology as the police rely on enhanced 911 service to protect the public. When MNLS is initially deployed, even AT&T claims merely that it will produce accuracy of 750 meters 95% of the time, according to AT&T's letter filing of August 6, 2001. That level of accuracy will not protect the public adequately according to the public safety community. To demonstrate this flaw in vivid terms, we provided Ms. Monteith with the attached maps comparing 50 meter, 100 meter, and 750 meter accuracies. The maps show beyond doubt that giving 911 operators locations of wireless callers within 750 meters will leave the police and other public safety organizations without sufficient information to locate the wireless callers quickly in emergencies.

We also discussed the flaws in MNLS set forth in the filings of TruePosition and SigmaOne Communications dated July 23 and 24, 2001. For example, we noted that TruePosition found a 6 dB standard deviation in the forward channel relative power measurements made by TDMA mobile phones, the measurements on which MNLS relies, as measured in 10 meter by 10 meter test areas. TruePosition showed that this deviation increases substantially as the distance of a TDMA mobile from a cell site expands, thereby increasing location error. We pointed out that TruePosition ran a simulation study using cell site data from real deployments over many coverage areas, including suburban and rural environments, and found that the expected accuracy for 67% of the calls using MNLS would be no better than the following, without taking into account any of the other flaws in MNLS:

<u>Cell Site Spacing</u>	<u>Accuracy</u>
2 km	340 meters
5 km	850 meters
10 km	1,700 meters
15 km	2,550 meters

These accuracy levels fall far short of the Commission's requirements.

We also said that there has not been sufficient testing of MNLS, and the recent test results submitted by US Wireless actually support our conclusion. The recent US Wireless filing gives the results in two highly limited and selected geographic areas of a total of 23.5 square miles after two models were developed using data from these regions. One of the two models was a sophisticated CRC model developed for the specific regions tested, and it was this model which US Wireless used to validate the test results to support the claim that the technology could be used in the balance of AT&T's network. In our meeting with the WTB Staff, we pointed out that even under these cherry picked, ideal conditions (areas which have an unduly large number of cell sites), this testing actually provides no support for any claim that MNLS is a reliable location method or that it will ever come close to the Commission's accuracy rules. US Wireless picked two well surveyed, confined, and small areas, built models and algorithms for those areas, and then conducted tests in the same areas; and, to get test results close to the woefully inadequate levels of accuracy promised by AT&T, they had to take repeated measurements (3 to 6 times) at each location. This testing says nothing about whether the models or the MNLS technology would work in any other area, much less any area where repeated calibration measurements have not been taken, where the cell sites are more typically spaced, or where signal strength is not predictable for a host of reasons.

In fact, we stated that the test results raise more questions than they answer. The San Ramon testing exhibited worse 67% accuracy than the Oakland testing, but better 95% accuracy. We stated that there was no explanation for this discrepancy. (The US Wireless report states that only partial results for San Ramon were presented, which does not explain the discrepancy.) In addition, we noted that the US Wireless filing does not explain how long it took US Wireless to calibrate the two test regions, and thus their report does not give the Commission any guidance as to how long it will take for AT&T to drive vehicles throughout AT&T's nationwide network to perform 4 or more calibration measurements for each calibration point within 50 by 50 meter grids, although US Wireless does note that increasing the calibration grids to 100 by 100 meters degraded performance. We pointed out that US Wireless' prior filing stated that in US Wireless' experience, drive testing is required approximately twice per year in the affected regions to maintain performance levels.

Indeed, we noted that the US Wireless testing purposely excluded rural areas or indoor settings, where it is apparent that MNLS will not work to any reliable or substantial extent. US Wireless does not even attempt to explain the level of accuracy by which MNLS will yield positioning indoors, where the required signal strength may not be achieved. Likewise, even in AT&T's Orlando testing, they apparently will not try to test MNLS in a rural area. Residents of rural areas especially need E911 service because they tend to live greater distances from hospitals and emergency facilities, and yet MNLS will not enable AT&T to provide accurate E911 service in rural areas. In short, MNLS technology will not produce reliable or accurate E911 service throughout the country. For all of these reasons, we urged the Commission to deny AT&T's waiver request.

IV. Conclusion

We ended the meeting with a brief discussion of the concerns raised by various CDMA carriers concerning actions needed by LECs to enable PSAPs to receive and use Phase II E911 location information. We understand that PSAPs can receive ALI information through "in band" or "out of band" procedures. PSAPs apparently do not need any upgrade from the LEC to receive the information out of band (*i.e.*, by dipping into the ALI database when receiving a wireless 911 call), but LECs are apparently attempting to persuade PSAPs to receive the information in band, which entails use of an ISDN line and an upgrade of the selective router. We noted that there is nothing inherent in wireless assisted GPS technology which requires such an upgrade, and we asked the Commission to assist any PSAP or wireless carrier experiencing any delay in the initiation of Phase II service due to non-action by a LEC.

Sincerely yours,



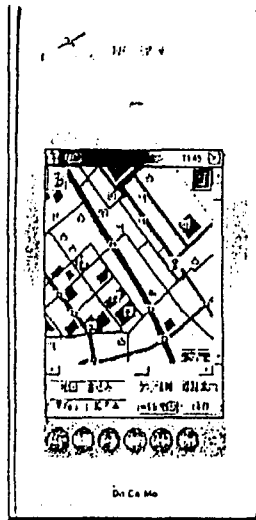
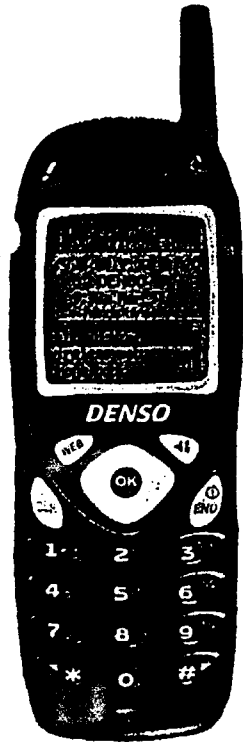
Dean R. Brenner
Attorney for QUALCOMM Incorporated

cc: Kris Monteith
Tom Navin
Patrick Forster
Marty Liebman

gpsOne and SnapTrack Worldwide Deployment

May 2001

QUALCOMM



1st AVE
LocB.net

- Over 30 carriers on three continents have trialed SnapTrack/gpsOne technology in the past 3 years on all major air interfaces
- January 2000 deployment of SnapTrack-enhanced Naviewn in Japan by NTT DoCoMo
- 2001 gpsOne MSM-3300-based deployment in Japan by SECOM on the KDDI network
- 2H2001 deployment of SnapTrack-enhanced 2-way pagers (ReFLEX) in North America via Locate Networks/Glenayre and partners
- 2H2001 gpsOne and MSM-3300 deployment in US by major US CDMA carriers (Sprint PCS, etc.)
- Over 20 CDMA handset manufacturers developing gpsOne-enabled handsets for both Asian and US markets
- Solutions for multiple air interfaces available beginning 2002

First gpsOne Commercial Product

SECOM.

ポケットの中に、セコム。

「あの子、どこ行っちゃったのかしら」「おばあちゃん、帰りが遅いわね...」「あれ?駐車場のクルマがない...」 あつてはならない、万が一の事態に備えること。そんなセキュリティの概念を、今、セコムはさらに進化させます。受信性能を格段に向上させた最先端のGPS技術と、携帯電話ネットワークを活用する測位システムを融合。24時間365日、小型専用端末を所持した利用者または車両の位置情報をかつてない高精度で提供するだけでなく、要請に応じ全国約900カ所の緊急発進基地から、セコムが誇る緊急対応員が出勤します。セコムが誇る緊急対応員が出勤します。クルマ、バイク用で900円からと、低価格を実現。それは、あなたの大切なひととを、クルマを、バイクを見守る、携帯するセキュリティ。セコムから、「位置情報提供・急行サービス」誕生。詳しくは、フリーダイヤルまたはホームページで。

さがす、みつける、かけつける。

ココセコム

4月1日(日)全国一斉サービス開始。 0120-855756 www.855756.com

2001年4月1日よりサービス開始。 We are SECOM.

- SECOM/Hitachi security device on a KDDI CDMA commercial network in Japan
- First deployed April 1, 2001
- Monthly fee: \$5/month, including 2 locate fixes
- Applications in Japan include monitoring location of automobiles, motorcycles, children, seniors

